

Application No. 09/841,255

at page 20, lines 10-13. The scope of the amended claim is intended to be essentially equivalent to the previous claim language. No new matter has been added by this amendment.

Claims 1-4, 6-10, 12-15 and 23-25 stand as rejected. Applicants respectfully request reconsideration of the rejections in view of the remarks presented below.

Double Patenting Over 09/136,483

The Examiner provisionally rejected claims 15, 23 and 25 for judicial doctrine of obviousness-type double patenting over claims 9 and 13 of copending application 09/136,483. Applicants assert that this obviousness-type double patenting rejection is improper since the present earlier filed application cannot be an attempt to extend the patent term of the later filed patent application. Under the revised statute 35 U.S.C. §154, patent term is based on the filing date. Therefore, the effective patent term of a later filed application cannot be unjustly extended by an earlier filed application. Thus, the earlier application should not be subject to an obviousness-type double patenting rejection over a later filed application. See MPEP 804.

In response to this argument in the Preliminary Amendment of September 6, 2002, the Examiner asserted that two reasons compel the continued rejection for obviousness-type double patenting. Specifically, the Examiner indicated that the terminal disclaimer was compelled by the possibility of patent term extension under 35 U.S.C. 154(b) and the requirement of common ownership imposed by a Terminal Disclaimer under 37 C.F.R. 1.321(c). Applicants maintain that neither of these reasons are reasonable, and neither compels the filing of a Terminal Disclaimer in the present case.

Patent term extensions were designed by Congress to address delays in prosecution of a patent application in the Patent Office. In the pre-GATT situation, patent term was based on the issue date of a patent such that delays in prosecution were addressed by the reference point of the patent term. Under the present statute, if the first filed patent is delayed

Application No. 09/841,255

and obtains a term extended beyond the expiration of the later filed patent, this is analogous to the pre-GATT situation of MPEP II(B)(1)(b), in which the "issued patent" (i.e., the earlier expiring patent) is the later filed application. For these situations, a two-way obviousness test was required and still is required. If the claims of the later filed application are not obvious over the claims of the earlier filed patent application, the term of the second filed application is not being improperly extended by the patent term extension of the first filed application, and the double patenting rejection is improper.

The Examiner may argue that the second filed application has not issued as a patent. In that case, the provisional double patenting rejection should not prevent issuance of the patent, see MPEP 804 (I)(B). Thus by analogy with the pre-GATT analysis, the Examiner has not asserted a proper provisional rejection since it must involve a two-way test. Requiring less than a two-way test would be an unfair result. If a later invention is filed on a non-obvious improvement, a patentee should not lose term related to the broader parent invention based on the filing of the non-obvious improvement patent. This term loss would discourage the invention and patenting of non-obvious improvements. Such a result is not reasonable nor is it intended by Congress.

However, this is not the end of the analysis. Application of the double patenting rules, as suggested by the Examiner, would be contrary to the express language of the statute and the purpose of the patent term extension. The judicial doctrine of obviousness-type double patenting was long established when the present form of patent term adjustment was enacted by Congress. Since 35 U.S.C. 154 does not limit patent term adjustment, we can assume that Congress intended to overturn obviousness-type double patenting with respect to limiting patent term adjustment. Neither the Patent Office nor the courts have the authority to circumvent statutory mandates. The statute could have been drafted by Congress to impose the double

Application No. 09/841,255

patenting limitation on the patent term adjustment, but was not. Therefore, even the use of a two-way test is not allowed by statute to eliminate a statutory patent term adjustment.

In addition, this issue raised by the Examiner is not ripe since the patent has not issued. Thus, there is no patent term extension that would raise the obviousness-type double patenting issue. However, Applicants maintain that even if there is a patent term extension, there is no obviousness-type double patenting.

With respect to the requirement of common assignment, this presumes a proper double patenting rejection. See In re Van Ornum, 214 USPQ 761, 763-767 (CCPA 1982). Applicants maintain that the obviousness-type double patenting rejection is not proper and should be withdrawn.

Applicants respectfully request withdrawal of the rejection of claims 15, 23 and 25 for obviousness-type double patenting over claims 9 and 13 of copending application 09/136,483.

#### Double Patenting Over 09/433,202

The Examiner provisionally rejected claims 1-4, 6, 15 and 23-25 for obviousness-type double patenting over claims 1, 3, 4, 14-18, 24 and 26 of copending application 09/433,202. Applicants assert that this obviousness-type double patenting rejection is improper since the present earlier filed application cannot be an attempt to extend the patent term of the later filed patent application. Under the revised statute 35 U.S.C. §154, patent term is based on the filing date. Thus, the effective patent term of a later filed application cannot be unjustly extended by an earlier filed application. Therefore, the earlier application should not be subject to an obviousness-type double patenting rejection over a later filed application. See MPEP 804.

In response to this argument in the Preliminary Amendment of September 6, 2002, the Examiner asserted that two reasons compel the continued rejection for obviousness-

Application No. 09/841,255

type double patenting. Specifically, the Examiner indicated that the terminal disclaimer was compelled by the possibility of patent term extension under 35 U.S.C. 154(b) and the requirement of common ownership imposed by a Terminal Disclaimer under 37 C.F.R. 1.321(c). Applicants maintain that neither of these reasons are reasonable, and neither of these reasons compels the filing of a Terminal Disclaimer in the present case. Applicants arguments were presented above with respect to the '483 application and are incorporated here by reference.

Applicants respectfully request withdrawal of the rejection of claims 15, 23 and 25 for obviousness-type double patenting over claims 9 and 13 of copending application 09/136,483.

Double Patenting Over Patent Application Publication 2001/0000912

The Examiner provisionally rejected claims 1-4 and 6-8 for obviousness-type double patenting over claims 1-8 of Patent Application Publication 2001/0000912. Applicants assert that this obviousness-type double patenting rejection is improper since the present earlier filed application cannot be an attempt to extend the patent term of the later filed patent application. Under the revised statute 35 U.S.C. §154, patent term is based on the filing date. Thus, the effective patent term of a later filed application cannot be unjustly extended by an earlier filed application. Therefore, the earlier application should not be subject to an obviousness-type double patenting rejection over a later filed application. See MPEP 804.

In response to this argument in the Preliminary Amendment of September 6, 2002, the Examiner asserted that two reasons compel the continued rejection for obviousness-type double patenting. Specifically, the Examiner indicated that the terminal disclaimer was compelled by the possibility of patent term extension under 35 U.S.C. 154(b) and the requirement of common ownership imposed by a Terminal Disclaimer under 37 C.F.R. 1.321(c). Applicants maintain that neither of these reasons are reasonable, and neither of these reasons

Application No. 09/841,255

compels the filing of a Terminal Disclaimer in the present case. Applicants arguments were presented above with respect to the '483 application and are incorporated here by reference.

Applicants respectfully request withdrawal of the rejection of claims 15, 23 and 25 for obviousness-type double patenting over claims 9 and 13 of copending application 09/136,483.

Double Patenting Rejection Over U.S. Patent 6,290,735

The Examiner rejected claims 1, 4, 6, 15 and 25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-8 and 11 of U.S. patent 6,290,735. The Applicants have attached to this amendment a terminal disclaimer which obviates the Examiner's obviousness-type double patenting rejection of claims 1, 4, 6, 15 and 25 over U.S. patent 6,290,735.

Applicants respectfully request the withdrawal of the rejection of claims 1, 4, 6, 15 and 25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over U.S. patent 6,290,735.

Rejections under EP 554 908

The Examiner rejected claims 15 and 25 under 35 U.S.C. § 102(b) as being anticipated by EP 554 908A (the EP '908 application). Specifically, the Examiner asserted that "the reference teaches alumina particles where substantially all of the particles have a particle size in the range of 20-50 nm and that is a substantial absence of particles, or effectively no particles, having a particle size greater than 100 nm." In order for a reference to anticipate the claimed invention, each claimed element must be disclosed in the reference. Applicants submit that the presently claimed invention is not anticipated by the EP '908 application, because the EP '908 application does not disclose a polishing composition comprising a dispersion of particles

Application No. 09/841,255

wherein less than 1 particle in  $10^6$  have a diameter greater than about five times the average diameter

In the Office Action of October 28, 2002, the Examiner, in response to Applicants' comment that several particles in figure 1 were larger than five times the average particles size, asserted that "Applicants have not provided any evidence to support their conclusions with respect to the particles shown by figure 1." Applicants supported their assertions based on a visual observation of Fig. 1 of the '908 application itself. Thus, Applicants have presented evidence unrefuted by the Examiner. The description of figure 1 discloses particles with diameters mainly in the range of 20-50 nm. Thus, the particles in figure 1 have an average diameter of about 35 nm. Five times the value of the average particles in figure 1 yields particles with a diameter of about 175 nm. The scale located at the bottom of figure 1 shows the distance represented by 200 nm. Based on this information, figure 1 clearly discloses several particles that are larger than 200 nm, which is larger than 175 nm, or five times the average particle size. Thus, Applicants' comments regarding the particles of figure 1 are fully supported by an examination of figure 1 of the '908 patent, and no further evidence is necessary to interpret the data of figure 1.

The Examiner also asserted that Applicants have "not explained why one of ordinary skill in the art would assume the argued particles sizes obtained from figure 1 are correct and the results of example 2 and the description of figure 1 in the body of the reference are incorrect." Applicants respectfully submit that a misunderstanding has occurred because Applicants have not asserted that any aspect of the '908 patent is necessarily incorrect or internally inconsistent. Rather, Applicants intended to point out in previous responses, and continue to assert now, that the description of results of example 2 are interpreted in light of the data disclosed in figure 1 and described in example 2. The description of the results in example 2 can be consistent with the figure by interpreting the language appropriately.

Application No. 09/841,255

The description of figure 1 on page 5 states that there are "very few" particles shown in figure 1 larger than 50 nm. Similarly, example 2 discloses that there is a "substantial absence of particles over 100 nm" in figure 1. A visual inspection of figure 1 reveals several particles that are larger than 200 nm. However, the fact that several particles in figure 1 are larger than 200 nm does not suggest that the results of example 2 and the description of figure 1 are necessarily incorrect. Rather, as noted in previous responses, the description in example 2 puts into words an interpretation of the data in figure 1. Consequently, the statements in example 2 have to be understood in light of the reference as a whole and in particular the data shown in figure 1. Thus, one of ordinary skill in the art would read the "substantial absence" language of example 2 in light of the data shown in figure 1. When the "substantial absence" language of example 2 is given meaning by referring to the data in figure 1, it becomes clear that a "substantial absence of particles over 100 nm" is a different standard than "less than 1 particle in  $10^6$ ."

In addition, the Examiner commented, in response to Applicants' arguments, that "Applicants state that the written description of in figure 2 is vague and unclear, but they have not presented any evidence to support this assertion nor have they submitted any evidence that one of ordinary skill in the art cannot understand the teaching in example 2." Applicants submit that the language of example 2 is vague and unclear only inasmuch as one of ordinary skill in the art could not clearly evaluate what the express language of example 2 (i.e., a "substantial absence of particles over 100 nm") means without looking at the reference as a whole, and specifically at the data in figure 1.

As noted above and in previous responses, the EP '908 application does not disclose a polishing composition comprising a dispersion of particles, wherein less than about 1 particle in  $10^6$  have a diameter greater than about five times the average diameter. Instead, as discussed above, figure 1 discloses a collection of particles where several particles have a

Application No. 09/841,255

diameter greater than about five times the average diameter. In contrast, the presently claimed invention relates to a polishing composition comprising a dispersion of particles, wherein less than about 1 particle in  $10^6$  have a diameter greater than about five times the average diameter. Since the EP '908 application does not disclose this feature of the presently claimed invention, the EP '908 patent does not anticipate Applicants' claimed invention.

Because the EP patent fails to anticipate the present invention, Applicants respectfully request the withdrawal of the rejection of claims 15 and 25 under 35 U.S.C. § 102(b) as being anticipated by the EP'908 application.

Rejections under Gutsche

The Examiner rejected claims 1, 2, 4, 6-8, 15, 23 and 25 under 35 U.S.C. 102(b) as being anticipated by U.S. patent 4,011,099 to Gutsche (the Gutsche patent). In order for a reference to anticipate the claimed invention, each claimed element must be disclosed in the reference. The Examiner asserted that the Gutsche patent "teaches a polishing slurry consisting of an aqueous solution and silica particles. The example teaches a dispersion of silica particles having a particles size of 25-30 nm, which means that all the particles have a size within this range and that the average particle size is also within this range." Applicants do not believe that the Gutsche patent can be interpreted reasonably as indicated by the Examiner. Applicants respectfully request reconsideration of the rejection based upon the following comments.

The Examiner, in response to Applicants' arguments that there is no characterization of the commercial silica, asserted that the patent discloses the use of SYTON HT 40, which is a commercial suspension of colloidal silica. The Examiner also commented that the "Applicants have not provided any evidence or explanation to support the assertion" that the Examiner's interpretation of the phrase "particle size" is incorrect. Applicants intended to attach a copy of product information on SYTON HT 50 with the previous response that reports

Application No. 09/841,255

the particle size of the colloidal silica in terms of average particle size. The product literature on SYTON HT 50 is attached to this response and provides sufficient evidence that the reasonable interpretation of the particle description in the reference is to average particle size. Furthermore, the description of "a particle size" does not provide any explanation of particle size distribution. Thus, the Examiner has failed to make out a prima facie case of anticipation because the Gutsche patent fails to disclose all of the elements of Applicants' claimed invention, in particular the claimed particle size distribution.

Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 4, 6-8, 15, 23 and 25 under 35 U.S.C. § 102(b) as being anticipated by Gutsche.

Rejection under Shimizu et al.

The Examiner rejected claims 1, 4, 6, 9, 10, 12-15 and 25 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 4,842,837 to Shimizu et al. (the Shimizu patent). Specifically, the Examiner asserted that the Shimizu patent "teaches silica particles used in polishing slurries. The particles have a monodispersed uniform particle size of 50 nm or less. Examples 1, 3 and 4 teaches uniform silica particles all have a particles size of 25, 42 or 17 nm and a purity greater than 99.9%. The taught silica particles have a single crystal phase and figure 1 and the statement that the particles are uniform means the particles have a uniformity of 100%." Applicants respectfully request reconsideration of the rejection in view of the following comments.

The Examiner has the burden to establish a prima facie case of anticipation. As such, the Examiner must show that a single reference contains every element set forth in the claim, and "the identical invention must be shown in as complete detail as contained in the...claim." See MPEP § 2131. In the abstract and example 1, the Shimizu patent discloses that the particles are "highly monodispersed." As noted in previous responses, the term highly is

Application No. 09/841,255

a relative term that does not quantify the degree of uniformity. In response to Applicants' arguments regarding the term "highly," the Examiner asserted that "examples 1, 3 and 4 and figure 1 show the particles have a single or uniform particle size." As noted in the previous response, Applicants believe that the magnification of figure 1 is insufficient to evaluate the presence of smaller particles. However, even the particles that are visible have noticeable size differences. As a result, the Examiner has failed to produce a reference that contains every element as set forth in Applicants' claims. Consequently, the Examiner has failed to establish prima facie anticipation since the Examiner has failed to establish that the reference teaches the claimed particle size distribution.

Since the Shimizu patent does not anticipate Applicants' claimed invention, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. § 102(b) as being anticipated by the Shimizu patent.

Rejections under Rostoker '194 and Rostoker '715

The Examiner rejected claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 5,389,194 to Rostoker et al. (the Rostoker '194 patent). The Examiner also rejected claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 under 35 U.S.C. § 102(e) as being anticipated by U.S. patent 5,626,715 to Rostoker (the Rostoker '715 patent). Applicants incorporate by reference the discussion of the two Rostoker patents from the Amendment of December 21, 2001 to avoid repeating the arguments. With respect to the responses in the Office Action of October 28, 2002, the Examiner asserted that "affidavits or declarations attacking the operability of a patent cited as a reference must rebut the presumption of operability by a preponderance of the evidence." The Examiner also asserted that "[t]here has been no showing of a preponderance of the evidence that the Q value cannot be determined by the disclosed method." Applicants submit that the declaration of Dr. Singh is easily sufficient to

Application No. 09/841,255

establish, by a preponderance of the evidence, that the value of Q cannot be determined. Applicants' respectfully request reconsideration of the rejection in view of the following comments.

The Examiner cited In re Sasse, 207 USPQ 107 (CCPA 1980), for the proposition that Applicants have the burden of rebutting the presumption of operability by a preponderance of the evidence. While Applicants maintain that they are not necessarily challenging operability since they cannot understand the terminology in the Rostoker claims, Applicants have clearly met the preponderance of the evidence standard. As noted at the end of the Sasse opinion, the Court found the appellants declaration "devoid of any persuasive factual basis," and as a result the appellants did not demonstrate, by a preponderance of the evidence standard, that the cited reference was inoperable. Id. at 112. Similarly, the Court in In re Sun, 31 USPQ 2d 1451, 1455 (CAFC 1993), held that the appellant's declaration was insufficient to show that the cited reference was not enabling because the declaration was "wholly conclusory." In both the Sasse case and the Sun case, the appellants' declarations were rebutted by new evidence produced by the examiner. Furthermore, in both cases the appellants attempted to rely solely on the statements in the declarations after the examiner had presented the rebuttal evidence.

In Ex parte Logan, 38 USPQ 2d 1852, 1856 (BPA 1994), the Court, in commenting on declaration evidence and other evidence submitted to establish the non-operability of a reference, stated "much of this evidence is factual in nature and clearly probative vis-à-vis the issue of enablement." The Court went on to hold that "[u]nder the circumstances recounted above, we believe that the appellant has successfully carried his burden of rebutting the presumption of operability." Id. In reaching this holding the Court expressly noted that "the examiner has failed to shoulder his burden of rebutting the appellant's evidence of non-enablement/inoperability." Id. Thus, the case law clearly indicates that declarations that have

Application No. 09/841,255

any factual basis, let alone a factual basis unrebutted by the Examiner, can rebut the presumption of operability.

Applicants have previously submitted a declaration of Dr. Singh which presents a factual basis for concluding that the value of Q in the Rostoker patent cannot be determined. The declaration clearly demonstrates that Dr. Singh is an expert in regards to particle technology. Furthermore, the declaration presents a detailed factual basis of why the value of Q cannot be determined. In response, the Examiner has failed to provide any evidence to rebut Applicants' evidence presented in Dr. Singh's declaration. As a result, Applicants have clearly established by well beyond a preponderance of the evidence that the value of Q in the Rostoker patent cannot be determined. If the Examiner is asserting that her arguments are factual evidence, the Examiner is invited to place them in the form of an affidavit under 37 C.F.R. 1.104(d)(2) such that Applicants can explicitly refute the Examiner's factual evidence such as by filing another Declaration.

The Examiner also asserted that "applicants admitted in the parent application, in the response of 18 July 2000, that they consider the patents are valid and thus enabling and operable." Applicants addressed this issue in the parent application in the response of November 17, 2000. Applicants stated then, and assert now, that the Applicants "have certainly NOT admitted that the Rostoker patent is enabling. Applicants have taken the position that the enablement of Rostoker is irrelevant since the Rostoker patents do not teach or suggest Applicants' claimed particle size distribution. Since the issue irrelevant, Applicants do not see any need to comment one way or the other on the enablement of Rostoker." Similarly, the Applicants stated in the July 19, 2000 response that the validity of the Rostoker patent is irrelevant. Thus, the Applicants never admitted in the parent case that the Rostoker patent is valid and therefore enabling.

Application No. 09/841,255

In previous responses Applicants have pointed out that the Examples in the Rostoker patents are prophetic because they are written in the present tense. In response, the Examiner asserted that the Applicants "have not provided any evidence to support this conclusion." In Atlas Power Co., v. E.I. du Pont de Nemours & Co., 224 USPQ 409 (Fed. Cir. 1984), the Federal Circuit determined that examples in the specification at issue were prophetic, rather than the results of actual tests, because the examples were written in the present tense. Applicants submit that the Atlas Powder Co. decision, along with the complete lack of any experimental description in the Rostoker patents, provides clear support for the conclusion that the Rostoker Examples are prophetic.

Applicants maintain that the Examiner has failed to establish prima facie anticipation and respectfully request withdrawal of the rejections of claims 1,3, 6-8, 15 and 23 under 35 U.S.C. § 102(e) over the Rostoker '715 patent and under 35 U.S.C. § 102(b) over the Rostoker '194 patent.

#### Rejections Over EP '908 Application and Secondary References

The Examiner rejected claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over EP '908 application in view of the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent. The Examiner asserted that the EP '908 application "teaches the claimed polishing compositions comprising a dispersion of alumina particles. This reference does not teach the composition of the liquid used in the polishing composition, but one of ordinary skill in the art would have found it obvious to use liquids conventionally used in polishing compositions. Sandhu et al, Rostoker, Rostoker et al and Gutsche all teach aqueous and nonaqueous solutions are conventionally used in polishing compositions." Applicants respectfully request reconsideration of the rejection based upon the following comments.

Application No. 09/841,255

As noted above, and in previous responses, the EP '908 application does not establish a prima facie case of anticipation of Applicants' claimed invention. The secondary references do not make up for the deficiencies of the EP '908 patent since they do not teach the claimed narrow particle size distribution. Therefore, the combined disclosures of the references fail to establish a prima facie case of obviousness of Applicants' claimed invention. Applicants respectfully request the withdrawal of the rejections of claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over the EP '908 application in view of the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent.

Rejections Over Shimizu and Secondary References

The Examiner rejected claims 1, 2, 4, 6-9, 12, 15, 23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Shimizu patent in view of the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent. The Examiner specifically asserted that "Shimizu et al teach the claimed polishing compositions comprising a dispersion of silica particles." However, as discussed above, the Shimizu patent does not establish a prima facie case of anticipation of Applicants' claimed invention because it fails to disclose all of the claimed elements. More specifically, the Shimizu patent does not disclose particles with properties specified in Applicants' claims. The secondary references do not make up for the deficiencies of the Shimizu patent. Therefore, the combined disclosures of the cited references do not establish a prima facie case of obviousness of Applicants' claimed invention. Applicants respectfully request reconsideration of the rejection of claims 2, 3, 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over the Shimizu patent in view of the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent.

Application No. 09/841,255

Rejections Over Rostoker '194 or Rostoker '715

The Examiner rejected claims 1, 2, 4, 6-9, 12, 15, 23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Rostoker '194 patent or the Rostoker '715 patent. The Examiner asserted that "both of these references teach a method of polishing a semiconductor surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad." However, the Rostoker '194 patent and the Rostoker '715 patent, taken alone or together, do not establish a prima facie case of obviousness because they do not teach or suggest particles with the properties specified in Applicants' claims. The deficiencies of the Rostoker patents are described in detail above. Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 4, 6-9, 12, 15, 23, and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Rostoker '194 patent or the Rostoker '715 patent.

Rejections Over Sandhu and Secondary References

The Examiner rejected claims 1-4, 6, 15 and 23-25 under 35 U.S.C. § 103(a) as being unpatentable over the Sandhu patent in view of the Gutsche patent, the Rostoker '194 patent and the Rostoker '715 patent. The Examiner asserted that the Sandhu patent "teach[s] a method of smoothing a surface using a chemical-mechanic polishing composition comprising alumina or silica abrasive particles dispersed in either an aqueous or a nonaqueous solution." The Examiner cited the secondary references for disclosing conventional chemical mechanical polishing. The deficiencies of the Sandhu patent are described in detail in previous responses with respect to the failure to teach the claimed narrow particle size distribution. Applicants respectfully request reconsideration based upon previous and following remarks.

The secondary references do not make up for the deficiencies of the Sandhu patent. Therefore, the combined disclosures of the cited references do not establish a prima facie

Application No. 09/841,255

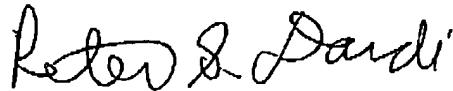
case of obviousness because they do not disclose all of the elements of Applicants' claimed invention. Applicants respectfully request the withdrawal of the rejection of claims -4, 6, 15 and 23-25 under 35 U.S.C. § 103(a) as being unpatentable over the Sandhu patent in view of the Gutsche patent, the Rostoker '194 patent and the Rostoker '715 patent.

### CONCLUSION

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



Peter S. Dardi, Ph.D.  
Registration No. 39,650

**OFFICIAL****FAX RECEIVED**

DEC 1 '02

GROUP 1700

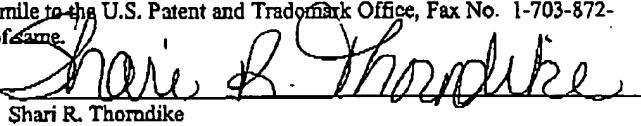
Customer No. 24113  
Patterson, Thuente, Skaar & Christensen, P.A.  
4800 IDS Center  
80 South 8th Street  
Minneapolis, Minnesota 55402-2100  
Telephone: (612) 349-5746

*Please grant any extension of time necessary for entry; charge any fee due to Deposit Account No. 16-0631.*

### CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office, Fax No. 1-703-872-9311 on the date shown below thereby constituting filing of same.

December 18, 2002  
Date

  
Shari R. Thorndike

Application No. 09/841,255

ATTACHMENT  
MARKED-UP AMENDMENTClaims As Amended

Claim 15 has been amended as follows:

15. (Amended) A polishing composition comprising a dispersion of particles, the particles comprising metal compounds or silicon compounds with an average particle diameter from about 5 nm to about 50 nm, [and effectively no particles with] wherein less than about 1 particle in 10<sup>6</sup> has a diameter greater than about five times the average diameter.

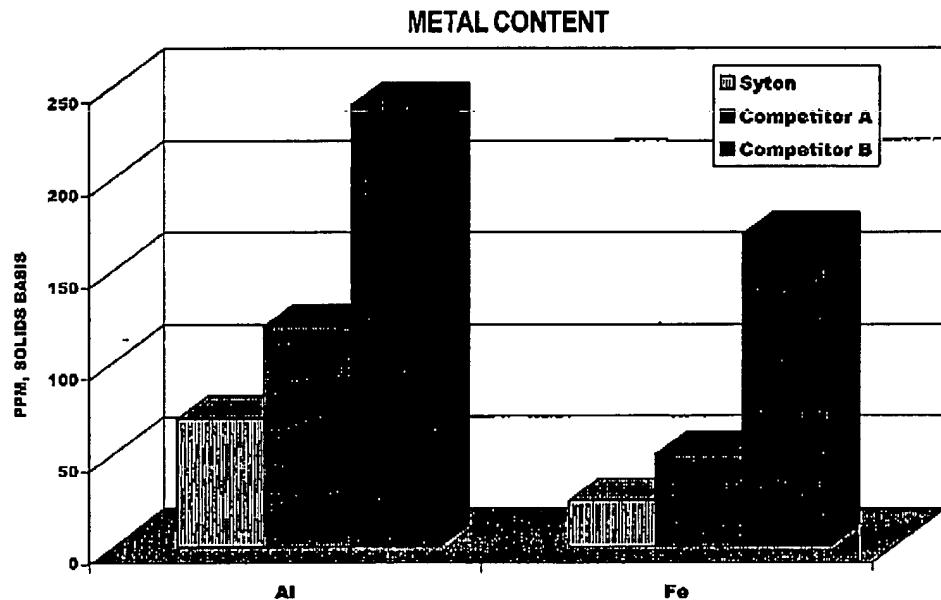
Offices

## SYTON<sup>®</sup> HT-50 Colloidal Silica Slurry

### PRODUCT DESCRIPTION

Syton<sup>®</sup> HT-50 is an aqueous colloidal silica with an average particle size of 40 nm. This product is sodium stabilized and has a unique particle size distribution. In addition, it has one of the lowest metal contents of any commercially available colloidal silica (Fig. 1). These properties make Syton HT-50 an excellent choice as a base material for polishing prime silicon wafers.

FIGURE 1: Comparative Metal Data



### TYPICAL PROPERTIES

Property	Typical Value	Trace Metals
Specific Gravity@20°C (gm/cm <sup>3</sup> )	1.390	Iron (ppm) ..... 15.0
SiO <sub>2</sub> (weight %)	49.8	Aluminum (ppm) ..... 55.0
pH @ 20°C	10.2	Copper (ppb) ..... 40.0
Average Particle Size (nm)	40.0	Chromium (ppb) ..... 350
		Nickel (ppb) ..... 130

The above metal results are based on 100% solids.





## SYTON® HT-50 Colloidal Silica Slurry

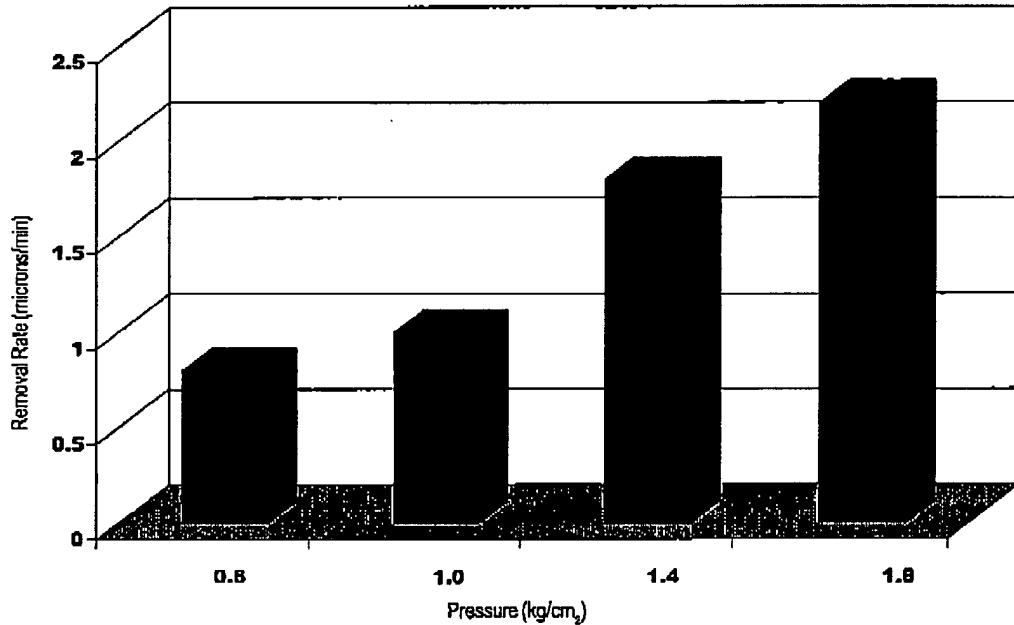
### APPLICATION

For polishing of prime silicon wafers dilute Syton HT-50 with deionized water. Dilution ratios of 15-20 parts deionized water to 1 part Syton HT-50 are recommended.

The diluted slurry should be adjusted to pH 10.8-11.0 with either diluted KOH or NaOH for optimum removal rates. Care should be taken when adding the dilute alkali to the colloidal silica solution. The concentration of the dilute alkali solution should not exceed 10% and the addition should be made in a well-agitated tank.

### PERFORMANCE

#### POLISHING PERFORMANCE



### TEST CONDITIONS

Equipment ..... Pres 660E Polisher  
 Wafer Type ..... 4 inch p-type (100)  
 Pad ..... Suba 500  
 Platen speed ..... 150 rpm  
 Slurry flow ..... 40 ml/mm.  
 Dilution ..... 15:1

The information given herein is based on data believed to be reliable, but DuPont Air Products NanoMaterials L.L.C makes no warranties expressed or implied as to its accuracy and assumes no liability arising out of its use by others. This publication is not to be taken as a license to operate under, or recommendation to infringe upon any patent.



DuPont Air Products NanoMaterials L.L.C.  
[www.nanoslurry.com](http://www.nanoslurry.com)